Space Weather Forecast

Issued on Wednesday, 08 March 2023 at 12:35 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate class flares (R1-R2/Minor-Moderate radio blackouts) likely. Slight chance of G1/Minor Storm intervals 08-09 March.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate through the past 24 hours with one moderate-class flare from a region near the centre of the disk in the north, this region has some magnetic complexity and is the largest on the visible disk. There are eleven sunspot regions on the visible disc. The other moderately large region of interest is located in the southeast quadrant. Remaining regions are all relatively simple or evolving slowly.
No Earth directed Coronal Mass Ejections (CMEs) were observed in available imagery during the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind was at elevated levels early in the period under coronal hole fast wind influence, near 570 km/s, but gradually reduced and is now around 440 km/s. The total Interplanetary Magnetic Field was weak, with the north-south component also varying weakly. Geomagnetic activity was Quiet (Kp 1 to 2).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low to Moderate, with a slight chance of Strong activity.

Solar Wind / Geomagnetic Activity: There is one possible glancing CME currently forecast on 08 March, but with low confidence. Earth is experiencing elevated solar wind speeds under the waning influence of a coronal hole fast wind. The fast wind is expected to continue to wane through Day 1 (08 Mar), but enhanced winds are likely to be prolonged by a smaller coronal hole which could connect later on Days 1 or 2 (08-09 Mar).
Geomagnetic activity is expected to be Quiet to Unsettled throughout the period, with a slight chance of Active or G1/Minor Storm intervals on Days 1 and 2, mainly due to any glancing CME effects or the onset of a small coronal hole fast wind.

Energetic Particles / Solar Radiation: Solar radiation levels are most likely to stay at background levels, but with a slight chance of reaching the S1/Minor Storm threshold or greater should any larger flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	10	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	50	50	50
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	15	15
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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